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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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23596 7590 06/01/2009 QUALCOMM INCORPORATED 5775 MOREHOUSE DR. SAN DIEGO, CA 92121				
EXAMINER				
CHOU, ALBERT T				
ART UNIT		PAPER NUMBER		
2416				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/686,442

Applicant(s)

REZAII FAR ET AL.

Examiner

ALBERT T. CHOU

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2009 for RCE.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18, 20-22, 24-34, 36-40, 42-44, 46-56, 58-61, 63-65, 67-77, 79-85, 87-89, 91-101 and 103 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-848)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 05/12/2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continuation of Disposition of Claims: Claims pending in the application are 18,20-22,24-34,36-40,42-44,46-56,58-61,63-65,67-77,79-85,87-89,91-101 and 103.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment/RCE filed on April 28, 2009 has been entered. Claims 18, 36-38, 39, 40, 58, 59, 79, 80-83 and 103 have been amended. Claims 23, 35, 45, 57, 66, 78, 90 and 102 have been canceled. No claims have been added. Claims 18, 20-22, 24-34, 36-40, 42-44, 46-56, 58-61, 63-65, 67-77, 79-85, 87-89, 91-101 and 103 are pending in this application, with claims 18, 37-40, 59, and 80-83 being independent.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 18, 20-22, 24-34, 36, 59-61, 63-65, 67-77 and 79 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. See page 10 of In Re Bilski 88 USPQ2d 1385. The instant claims are neither positively tied to a particular machine that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process.

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For example, a method of transferring data in a communication system, comprising (steps of): *receiving (or transmitting) a plurality of registration requests....; receiving a plurality of data packets ...; transmitting (or receiving) each of the plurality of packets...; receiving (or transmitting) a back-pressure message ..., etc.*, as recited in claim 18 or 59, are broad enough that the claim could be completely performed mentally, verbally or without a machine (this is pure software) nor is any transformation apparent.

Claims 20-22, 24-34, 36, 60-61, 63-65, 67-77 and 79 directly or indirectly depend from claims 18 and 59, respectively, and thus are rejected on the same ground of rejection as to claims 18 and 59.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18, 21, 22, 24, 37-40, 43, 44, 46, 59-61, 64, 65, 67, 80-85, 88, 89, and 91 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,963,582 to Xu in view of by US Patent No. 6,522,880 to Verma et

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al. (hereinafter "Verma"), further in view of RFC 2983 by D. Black, October 2000 (<http://www.ietf.org/rfc/rfc2983.txt>, hereinafter "Black") and further in view of US Patent Application Pub. 2005/0227695 A1 by Rasanen et al. (hereinafter "Rasanen"). Since RFC 2002 and RFC 1701 are incorporated in Xu by references **[col. 1, lines 46-50; col. 2; lines 26-36]**, Examiner considers these RFCs are formed as parts of Xu's disclosures.

Regarding claims 18 and 37-40, Xu teaches a method, an apparatus, a processor and a computer-readable medium storing computer instructions executed, of transferring data in a communication system **[Figs. 1-4]**, comprising:

receiving a plurality of registration requests from a radio access network (RAN) node, wherein each registration request identifies a corresponding mobile node **[Figs. 1-2; The PSDN 28 receives a Mobile Node 20 registration request relayed from RN 24; col. 7, lines 34-43]**, wherein receiving the plurality of registration requests further comprises receiving a respective routing key with each registration request wherein each respective routing key is generated by the RAN node **[Figs. 3-4; col. 7, lines 36-48, col. 8, line 51- col. 10, line 2]**;

receiving a plurality of data packets, wherein each of the plurality of data packets is destined for a respective mobile node and corresponds to a respective data packet treatment **[Figs. 1-2; PDSN 28 receives data packets destined for the Mobile Node 20 from Home IP Network 32. The R-P Interface 26]**

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provides Packet Control Function PCR supporting QoS for each user data tunneling; col. 3, lines 8-26; col. 3, line 39 – col. 4, line 12 & RFC 2002];

establishing a plurality of tunnels with the RAN node for each respective mobile node **[Figs. 1-2; PDSN 28 receives registration requests and responds by returning registration replies to establish tunnels between RN 24 and PDSN 28 for respective mobile nodes; col. 5, line 45 – col. 6, line 9; col. 7, lines 34-48]**, wherein each of the plurality of tunnels corresponds to a respective data packet treatment **[Figs. 1-2; The R-P Interface 26 provides Packet Control Function PCF supporting QoS for each user data tunneling; col. 3, line 39 – col. 4, line 12 & RFC 2002];** wherein a number of the plurality of tunnels is independent of a number of air-interface links between the RAN node and the respective mobile node **[Figs. 1-2; Each Mobile Node 20A-20C has more than one call connections but needs only one air link 22 between RN 24 and Mobile Node 20; col. 5, line 60 – col. 6, line 9 & RFC 2002]**, wherein the establishing further comprises enabling the RAN node to reorder respective data packets in different tunnels **[Figs. 1-2; If packets arriving at the RN or RDSN lose their sequencing across the R-P network, the receiving entity may attempt to re-sequence the packet before delivery to the PPP layer; col. 10, lines 23-31];** and

transmitting each of the plurality of data packets over a respective one of the plurality of tunnels according to the respective data packet **[Figs. 1-2; PSDN 28 transmits data packets from Home IP Network 32 to Mobile Node 20. The R-P Interface 26 provides Packet Control Function PCR supporting**

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QoS for user data tunneling; col. 3, lines 8-26; col. 3, line 39 – col. 4, line 12 & RFC 2002].

Xu does not expressly teach the routing key comprises a first field and a second field, wherein the first field identifies the respective corresponding mobile node, wherein the second field is reserved for indicating a tunnel identifier; preventing the RAN from reordering respective data packets having identical tunnel identifiers; and receiving a back-pressure message from the RAN node, wherein the back-pressure message corresponds to a respective one of the plurality of tunnels.

Verma teaches the routing key comprises a first field and a second field, wherein the first field identifies the respective corresponding mobile node **[Figs. 1-2; Mobile Identification Number MIN; col. 2, lines 21-27; MIN, Tunnel ID; col. 9, lines 30-53]**, wherein the second field is reserved for indicating a tunnel identifier **[Fig. 2, step 112; assigns a tunnel ID value; col. 3, lines 50-59]**; Black teaches Differentiated Services and Tunnels, wherein preventing the IP tunnel from reordering respective data packets having identical tunnel identifiers **[Black: RFC 2983, Section 4.1, Ingress DSCP Selection and Reordering]**; and Rasanen teaches a wireless network, wherein the core network receiving a back-pressure message from the RAN node, wherein the back-pressure message corresponds to a respective one of the plurality of tunnels **[Rasanen: Figs. 1-2; using Flow Control ON/Flow Control OFF type of flow control. In this case, when the flow control is set ON by the receiving network element**

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on one side of the tunnel, e.g. in the RNC, the transmitting network element, e.g., the MSC, on the other side of the tunnel sends no data until flow control is set OFF; para. 0040].

Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to recognize that the combination of mobile ID and the tunnel can be used for constructing a unique routing key for GRE packet, which is a matter of design choice, that not reordering respective data packets having identical tunnel identifiers is a standard implementation in IP tunneling, and that an ON/OFF flow control can be implemented for each tunnel established between the RAN and the core network. The motivation for combining the reference teachings would be to easily assign a unique routing key for the purpose of routing GRE packets, to avoid undesirable interactions of reordering with reordering-sensitive packets within the IP tunnel, and to apply the flow control or back-pressure for each tunnel established between the RAN and the core network.

Regarding claims 21, 43, 64 and 88, Xu teaches each of the plurality of tunnels having a different at least one tunnel attribute corresponding to a different one of the respective data packet treatments **[Figs. 1-2; The R-P Interface 26 provides Packet Control Function PCF supporting QoS for each user data tunneling; col. 3, line 39 – col. 4, line 12 & RFC 2002].**

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Regarding claims 22, 44, 65 and 89, Xu teaches the establishing is in response to the receiving of a respective one of the plurality of data packets having a respective data packet treatment **[Figs. 1-2; The R-P Interface 26 provides Packet Control Function PCF supporting QoS for each user data tunneling; col. 3, line 39 – col. 4, line 12 & RFC 2002]**.

Regarding claims 24, 46, 67 and 91, Xu teaches the number of the plurality of tunnels is greater than the number of the air-interface links **[Figs. 1-2; Each Mobile Node 20A-20C has more than one call connections but needs only one air link 22 between RN 24 and Mobile Node 20; col. 5, line 60 – col. 6, line 9 & RFC 2002]**.

Regarding claims 59 and 80-83, Xu teaches a method, an apparatus, a processor and a computer-readable medium storing computer instructions executed, of transferring data in a communication system **[Figs. 1-4]**, comprising:

transmitting a plurality of registration requests from a radio access network (RAN) node to a network access node, wherein each registration request identifies a corresponding mobile node **[Figs. 1-2; A Mobile Node 20 sends a registration request to RN 24 which processes the request and then relays it to PSDN 28; col. 7, lines 36-43]**, wherein transmitting the plurality of registration requests further comprises transmitting a respective routing key with

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each registration request, wherein each respective routing key is generated by the RAN node **[Figs. 3-4; col. 7, lines 36-48, col. 8, line 51- col. 10, line 2];**

receiving information from the network access node to establish a plurality of tunnels between the network access node and the RAN node for each respective mobile node **[Figs. 1-2; RN 24 receives registration reply messages to establish tunnels between RN 24 and PDSN 28 for respective mobile nodes; col. 5, line 45 – col. 6, line 9; col. 7, lines 34-48]**, wherein each of the plurality of tunnels corresponds to a respective data packet treatment corresponding to a respective one of a plurality of data packets received by the network access node **[Figs. 1-2; The R-P Interface 26 provides Packet Control Function PCR supporting QoS for user data tunneling established between RN 24 and PDSN 28; col. 3, line 39 – col. 4, line 12 & RFC 2002]**, wherein each of the plurality of data packets received by the network access node is destined for a respective mobile node and comprises a respective data packet treatment **[Figs. 1-2; RN 24 receives data packets destined for the Mobile Node 20 from PDSN 28. The R-P Interface 26 provides Packet Control Function PCR supporting QoS for user data tunneling; col. 3, line 39 – col. 4, line 12 & RFC 2002]**, wherein a number of the plurality of tunnels is independent of a number of the air-link interfaces between the RAN node and the respective mobile node **[Figs. 1-2; Each Mobile Node 20A-20C has more than one call connections but needs only one air link 22 between RN 24 and Mobile Node 20; col. 5, line 60 – col. 6, line 9 & RFC 2002];** and

receiving each of the plurality of data packets over a respective one of the plurality of tunnels according to the respective data packet treatment **[Figs. 1-2; RN 24 receives data packets destined to Mobile Node 20 from PDSN 28. The R-P Interface 26 provides Packet Control Function PCR supporting QoS for user data tunneling; col. 3, lines 8-26; col. 3, line 39 – col. 4, line 12 & RFC 2002]**, wherein the receiving further comprises enabling the RAN node to reorder respective data packets in different tunnels **[Figs. 1-2; If packets arriving at the RN or RDSN lose their sequencing across the R-P network, the receiving entity may attempt to re-sequence the packet before delivery to the PPP layer; col. 10, lines 23-31]**.

Xu does not expressly teach the routing key comprises a first field and a second field, wherein the first field identifies the respective corresponding mobile node, wherein the second field is reserved for indicating a tunnel identifier; and preventing the RAN from reordering respective data packets having identical tunnel identifiers; and transmitting a back-pressure message to the network access node, wherein the back- pressure message corresponds to a respective one of the plurality of tunnels.

Verma teaches the routing key comprises a first field and a second field, wherein the first field identifies the respective corresponding mobile node **[Figs. 1-2; Mobile Identification Number MIN; col. 2, lines 21-27; MIN, Tunnel ID; col. 9, lines 30-53]**, wherein the second field is reserved for indicating a tunnel identifier **[Fig. 2, step 112; assigns a tunnel ID value; col. 3, lines 50-59]**,

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Black teaches Differentiated Services and Tunnels, wherein preventing the IP tunnel from reordering respective data packets having identical tunnel identifiers

[Black: RFC 2983, Section 4.1, Ingress DSCP Selection and Reordering];

and Rasanen teaches a wireless network, wherein the core network transmitting a back-pressure message to the network access node, wherein the back-

pressure message corresponds to a respective one of the plurality of tunnels

[Rasanen: Figs. 1-2; using Flow Control ON/Flow Control OFF type of flow control. In this case, when the flow control is set ON by the receiving network element on one side of the tunnel, e.g. in the RNC, the transmitting network element, e.g., the MSC, on the other side of the tunnel sends no data until flow control is set OFF; para 0040].

Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to recognize that the combination of mobile ID and the tunnel can be used for constructing a unique routing key for GRE packet, which is a matter of design choice, and that not reordering respective data packets having identical tunnel identifiers is a standard implementation in IP tunneling, and that an ON/OFF flow control can be implemented for each tunnel established between the RAN and the core network. The motivation for combining the reference teachings would be to easily assign a unique routing key for the purpose of routing GRE packets, and avoid undesirable interactions of reordering with reordering-sensitive packets within the IP tunnel, and to apply the

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flow control or back-pressure for each tunnel established between the RAN and the core network.

Regarding claims 60 and 40, Xu teaches forwarding each respective one of the plurality of data packets to the corresponding mobile node [**Figs. 1-2; RN 24 forwards data packets destined to Mobile Node 20 via Air Link 22**].

Regarding claims 61 and 85, Xu teaches establishing the number of air-interface links between the RAN node and each respective mobile node, wherein the forwarding further comprises forwarding via a respective air-interface link [**Figs. 1-2; Air Interface/Air Link 22; col. 3, lines 27-60**].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20, 25, 26, 42, 47, 48, 63, 68, 69, 87, 92 and 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,963,582 to Xu in view of by US Patent No. 6,522,880 to Verma et al. (hereinafter "Verma"), in view

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of RFC 2983 by D. Black, October 2000 (<http://www.ietf.org/rfc/rfc2983.txt>, hereinafter "Black"), further in view of US Patent Application Pub. 2005/0227695 A1 by Rasanen et al. (hereinafter "Rasanen"), and further in view of US Patent No. 7,072,336 to Barany et al. (hereinafter "Barany"). Since RFC 2002 and RFC 1701 are incorporated in Xu by references **[col. 1, lines 46-50; col. 2; lines 26-36]**, Examiner considers these RFCs are formed as parts of Xu's disclosures.

Regarding claims 20, 25, 26, 42, 47, 48, 63, 68, 69, 87, 92 and 93, Xu, in view of Verma, Black and Rasanen, does not expressly teach establishing further comprises indicating to the RAN node whether or not the respective data packets carried by the respective tunnel can be dropped; each respective data packet treatment comprises signaling information comprising at least one of a Differentiated Service Code Point (DSCP) marking and translating each respective signaling information into a respective code point value understood by the RAN node.

Barany teaches a communication network includes a wireless communication system 11 coupled to a packet-based data network 24 **[Figs. 1, 2 & 4; col. 3, lines 9-34]**. Barany teaches a message flow for establishing a communication session between a mobile node and the packet-based data network 24 **[Figs. 1, 2 & 4; col. 8, line 45 – col. 9, line 8]** indicating to the RAN node whether or not the respective data packets carried by the respective tunnel can be dropped **[Figs. 1, 2 & 4; DSCP maps to a specific PHB of routers. PHB denotes a combination of forwarding, classification, scheduling, and**

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dropping behaviors applied to a behavior aggregate (BA) at each hop; col. 7, lines 26-46, col. 8, line 45 – col. 9, line 8]; each respective data packet treatment comprises signaling information comprising at least one of a Differentiated Service Code Point (DSCP) marking [Figs. 1, 2 & 4; One field of an IP header is a DS field. The DS field is assigned a Diff-Serv code point DSCP; col. 7, lines 26-46] and translating each respective signaling information into a respective code point value understood by the RAN node [Figs. 1, 2 & 4; Application 124 (Fig. 20) in each user devices 100 sets a DSCP value in the DS field of an IP packet; col. 7, lines 26-46].

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to incorporate the Differential Service information in the IP header, as disclosed by Barany, into Xu, in view of Verma, Black and Rasanen, as a QoS indicator for each of IP data packets exchanged between RN 24 and PDSN 28.

The motivation for combining the reference teachings would be to enable RN 24 and PSDN 28 to assign each data packet with a DS Code Point, which maps to a specific per-hop behavior PHB of nodes (such as RN 24 and PSDN 28) that are part of the path along which the packet is transmitted so that a combination of forwarding, classification, scheduling, and drop behaviors can be applied to a behavior aggregate at each hop that is a DS-compliant node.

Regarding claims 23, 45, 66 and 90, Xu, in view of Verma, Black, Rasanen and Barany, teaches the method, wherein the establishing further

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comprises: indicating to the RAN node whether or not the respective data packets carried by the respective tunnel can be dropped **[see rejection statement to claim 20]**; and wherein each of the plurality of tunnels comprises a different at least one tunnel attribute corresponding to a different one of the respective data packet treatments **[see rejection statement to claim 21]**.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 36, 58, 79 and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,963,582 to Xu in view of by US Patent No. 6,522,880 to Verma et al. (hereinafter "Verma"), in view of RFC 2983 by D. Black, October 2000 (<http://www.ietf.org/rfc/rfc2983.txt>, hereinafter "Black"), further in view of US Patent Application Pub. 2005/0227695 A1 by Rasanen et al. (hereinafter "Rasanen") and further in view of US Patent No. 7,072,336 to Barany et al. (hereinafter "Barany"). Since RFC 2002 and RFC 1701 are incorporated in Xu by references **[col. 1, lines 46-50; col. 2; lines 26-36]**, Examiner considers these RFCs are formed as parts of Xu's disclosures.

Regarding claims 36, 58, 79 and 103, Xu, in view of Verma, Black, teaches each respective data packet treatment comprises signaling information comprising at least one of a Differentiated Service Code Point (DSCP) marking **[see rejection statement to claim 25]**, wherein establishing further comprises translating each respective signaling information into a respective code point value understood by the RAN node **[see rejection statement to claim 26]**.

Xu, in view of Verma, Black and Rasanen, does not expressly teach the back-pressure message is based on a respective code point corresponding to the respective one of the plurality of tunnels.

Barany teaches comprising receiving a back-pressure message from the RAN node, wherein the back- pressure message corresponds to a respective one of the plurality of tunnels **[e.g. receiving an IP packet from the RAN 18 with a DSCP value assigned in the DS field in the IP header. PHB denotes a combination of classification, scheduling, forwarding, and drop behaviors (i.e. a flow control mechanism to start/stop/drop data packets) applied to a behavior aggregate at each hop/node; col. 7, lines 25-46]** and wherein the back-pressure message is based on a respective code point corresponding to the respective one of the plurality of tunnels **[The DS field is assigned a DS code point (DSCP), which maps to a specific PHB of nodes. col. 7, lines 25-46]**

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to incorporate the differentiated services, DSCP

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and PHB functions of nodes as disclosed by Barany into RN 24 and PSDN 28 of Xu.

The motivation for combining the reference teachings would be to enable RN 24 and PSDN 28 to assign each data packet with a DS Code Point, which maps to a specific per-hop behavior PHB of nodes (such as RN 24 and PSDN 28) that are part of the path along which the packet is transmitted so that a combination of forwarding, classification, scheduling, and drop behaviors can be applied to a behavior aggregate at each hop that is a DS-compliant node.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 27-34, 49-56, 70-77 and 94-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,963,582 to Xu in view of by US Patent No. 6,522,880 to Verma et al. (hereinafter "Verma"), further in view of RFC 2983 by D. Black, October 2000 (<http://www.ietf.org/rfc/rfc2983.txt>, hereinafter "Black") and further in view of US Patent Application Pub. 2005/0227695 A1 by Rasanen et al. (hereinafter "Rasanen"). Since RFC 2002 and RFC 1701 are incorporated in Xu by references [col. 1, lines 46-50; col. 2;

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lines 26-36], Examiner considers these RFCs are formed as parts of Xu's disclosures.

Regarding claims 27, 49, 70 and 94, Xu, in view of Verma, Black and Rasanen, teaches each limitation set forth in their respective parent claim.

Xu, in view of Verma, Black and Rasanen, does not expressly teach the routing key further comprises a variable set by the RAN node to variably allocate resources between a plurality of mobile nodes and a respective plurality of tunnels.

However, Xu uses a modified GRE signaling to eliminate the necessity of a separate tunnel ID and session ID (i.e. Mobile ID) to improve the mobility management **[col. 10, lines 52-65]**. Since RFC 1701 only defines Key (optional) field contains a four octet number which was inserted by the encapsulator and indicates that the key field may be used by the receiver to authenticate source of the packet **[RFC 1701, page 3]**. Thus, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to recognize that the arrangement of maintaining a separate mobile ID, a tunnel ID and/or a variable boundary between IDs, as used in other protocols (such as in Verma and the instance application) is simply a design choice or a pure manipulation of routing key data structure. Therefore, the inclusion of *"a variable set by the RAN node to variably allocate resources between a plurality of mobile nodes and a respective plurality of tunnels"* does not depart from the scope of Xu's, in view of Verma and Black, invention.

Regarding claims 28, 50, 71 and 95, Xu, in view of Verma, Black and Rasanen, teaches the variable set by the RAN node to variably allocate resources is based on at least one of historical usage of mobile nodes, or available data services **[See rejection statement to claim 27]**.

Regarding claims 29, 51, 72 and 96, Xu, in view of Verma and Black, teaches the variable comprises a field length of the routing key or a variable alternate field **[See rejection statement to claim 27]**.

Regarding claims 30, 52, 73 and 97, Xu, in view of Verma, Black and Rasanen, teaches the variable comprises the first field and the second field each having a variable field length **[See rejection statement to claim 27]**.

Regarding claims 31, 53, 74 and 98, Xu, in view of Verma, Black and Rasanen, teaches establishing the plurality of tunnels with the RAN node for each respective mobile node further comprises generating a tunnel identifier according to the second field **[See rejection statement to claim 27]**.

Regarding claims 32, 54, 75 and 99, Xu, in view of Verma, Black and Rasanen, teaches receiving the plurality of registration requests further comprises receiving a respective Generic Routing Encapsulation (GRE) key with each registration request, wherein each GRE key is generated by the RAN node

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[Xu: Figs. 3-4; col. 7, lines 36-48, col. 8, line 51- col. 10, line 2], and comprises a packet service identifier (PSI) field [Verma: Figs. 1-2; Mobile Identification Number MIN; col. 2, lines 21-27; MIN, Tunnel ID; col. 9, lines 30-53] and a tunnel identifier (MTID) field [Verma: Fig. 2, step 112; assigns a tunnel ID value; col. 3, lines 50-59], wherein the PSI field identifies the respective corresponding mobile node [Verma: Figs. 1-2, 6, step 412; Mobile Identification Number MIN; col. 2, lines 21-27; MIN, Tunnel ID; col. 9, lines 30-53], and wherein the MTID field identifies a value corresponding to an available number of tunnels that may be established [Verma: Fig. 2, steps 112-118; use tunnel ID value assigned for establishing tunnel connection 56; col. 3, line 60 – col. 4, line 7].

Though Xu uses a modified GRE signaling to eliminate the necessity of a separate tunnel ID and session ID (i.e. Mobile ID) to improve the mobility management **[Xu: col. 10, lines 52-65]**, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to recognize that the arrangement of maintaining a separate mobile ID and a tunnel ID as used in other protocols (such as in Verma and the instance application) is simply a design choice and does not depart from the scope of Xu's, in view of Verma and Black, invention.

Regarding claims 33, 55, 76 and 100, Xu, in view of Verma, Black and Rasanen, teaches generating a tunnel identifier corresponding to one of the

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available number of tunnels **[Verma: Fig. 2, step 112; assigns a tunnel ID value; col. 3, lines 50-59].**

Regarding claims 34, 56, 77 and 101, Xu, in view of Verma, Black and Rasanen, teaches receiving a respective GRE header comprising the GRE key and a sequence number corresponding to a sequence space **[Xu: Figs. 3-4; GRE Header 96, Sequence Number; col. 8, line 44 – col. 9, line 33]**, wherein each of the plurality of tunnels have different respective sequence spaces **[Xu: Figs. 3-4; GRE Header 96, Sequence Number per session; col. 8, line 44 – col. 9, line 33].**

Response to Arguments.

7. Applicant's arguments, filed on April 28, 2009, with respect to claims 18, 37-40, 59, 80-83 and other dependent claims in the application have been considered but are moot in view of the new ground(s) of rejection.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert T. Chou whose telephone number is 571-272-6045. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham, can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Albert T Chou/
Examiner, Art Unit 2416
May 18, 2009